described above, the adhesive strength can be improved with the effect of reducing the coefficient of linear expansion by the inorganic filler 6f kept provided. This improves the adhesion strength to the IC chip 1 and the board 4 and improves the reliability.

Furthermore, when the portion 700 or the resin layer 6x that has a small amount of inorganic filler 6f is arranged on the IC chip side or when the inorganic filler distribution is reduced on the IC chip side, the portion 700 or the resin layer 6x is able to have an improved adhesive strength to the passivation film made of silicon nitride or silicon oxide on the IC chip surface. It is also possible to properly select and employ an insulating resin that improves adhesion to the film material used on the IC chip surface. Moreover, by reducing the elastic modulus in the vicinity of the IC chip, the stress concentration in the encapsulating sheet material, which is one example of the anisotropic conductive layer, is alleviated. If such a structure is adopted when the material used for the board 4 is as hard as ceramic (with high elastic modulus), then there is advantageously provided matching with the encapsulating sheet material in the vicinity of the board in terms of elastic modulus and the coefficient of linear expansion.

In the case where the portion 700 or the resin

layer 6x having a small amount of inorganic filler 6f is arranged on the board side or in the case where the inorganic filler distribution is reduced on the board side, if a bending stress is applied when the board 4 is assembled into the casing of electric equipment when a bending force is applied to the board 4 as in the case of a resin board or a flexible board (FPC), then the portion or layer can be used for the purpose of improving the adhesion strength exerted between the board 4 and the encapsulating sheet that serves as an example of the anisotropic conductive layer. In the case where the surface layer on the IC chip side is constructed of a protecting film formed of a polyimide film, the elastic modulus and the coefficient of linear expansion vary continuously or in steps from the IC chip 1 to the board 4 when the adhesion of the insulating resin is generally satisfactory and has no problem, allowing the encapsulating sheet to be made of a hard material on the IC chip side and of a soft material on the board side. With this arrangement, the stress generation inside the encapsulating sheet is reduced, and therefore, the reliability is improved.

Furthermore, in the case where the portion 700 or the resin layers 6x and 6z having a small amount of inorganic filler 6f are arranged on both the IC chip side and the board side or in the case where the inorganic

filler distribution is reduced on both the IC chip side and the board side, a compatibility is assured on both the IC chip side and the board side. This enables the improvement in adhesion on both the IC chip side and the board side and the connection of both the IC chip 1 and the board 4 with high reliability with a reduced coefficient of linear expansion. Moreover, it is allowed to select and employ an insulating resin of excellent adhesion and resin wettability according to the material of the surface on the IC chip side and the board material. Moreover, the inclination of the loadings of the inorganic filler 6f can be freely changed, and therefore, it is possible to provide matching with the board material by extremely reducing the thickness of the portion or layer that has a small amount of inorganic filler 6f or taking similar measures.

(Fifteenth Embodiment)

According to a fifteenth embodiment of the present invention, a process for producing an anisotropic conductive layer to be used for the methods and apparatuses for mounting electronic components of, for example, IC chips on circuit boards and electronic component units or modules of, for example, semiconductor devices in which the IC chips are mounted on the boards by the mounting methods according to the eighth through fourteenth embodiments and the modification examples thereof will be described next